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ABSTRACT

A random sample of fourth and eighth grade Title I students who either did or did not attend summer school was tested to determine what effect the Title I summer school program had on student achievement and summer loss in reading and mathematics. Academic achievement was assessed by the Stanford Achievement Tests. The results indicated summer school did not make a difference in Title I student performance for these grade levels. Most differences between the two groups were nonexistent by the end of September. Students not attending summer school usually gained more or lost less than students attending summer school. The necessity of a summer Title I academic program is questionable. (Author/JP)

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SUMMER SCHOOL - DOES IT MAKE A DIFFERENCE?

The Title I summer school program runs concurrently with the regular school summer program. Only students eligible for Title I may participate in the program. Students receive reading and mathematics services similar to those offered during the school year. It has been shown that most children suffer some summer loss in achievement regardless of the program they are studying (Scott, 1967). Gagne' (1966) has shown that repetition and reinforcement can overcome the effects of forgetting brought about by interference and time lags. Do these phenomenons hold up for Title I students?

A primary objective of this study was to determine whether or not the Title I summer school program made a difference in student performance. Proponents for the academic program felt the summer program increased learning. Opponents thought it did not contribute and should be eliminated or changed in concept if possible. The primary question under investigation was, "Is there a difference in student performance in reading and mathematics between Title I students who attend summer school and those who do not attend summer school?"

The major hypothesis tested was one of no significant difference in student performance in reading and mathematics between Title I students who attended summer school and those who did not as measured by the Stanford Achievement Test at the .05 level of significance. In addition, the extent of summer loss within the groups was studied.

Method

Sample. A random sample of fourth-and eighth-grade students was selected from the 1974-75 regular school Title I rosters and the 1975 summer school Title I rosters. Students were grouped according to the service they received-- reading or mathematics. A prescore for each student was obtained from the countywide testing program administered in May, 1975. Students were tested using the same level of the Stanford Achievement Test between September 30 and October 2, 1975.

From a sample of 1,200 students, the analysis was performed on 588 students. See Table 1. Students were eliminated from the sample if they did not have both scores. Absenteeism, transfers, and withdrawls account for the reduced sample. This was expected and the original sample was increased accordingly.

Table 1

Number of Title I Students
May to September

Group	Fourth Grade		Eighth Grade	
	Reading	Mathematics	Reading	Mathematics
Summer School	90	105	63	69
Nonsummer School	87	74	53	47

Procedure. The regular school summer session was divided into two parts. Midway in the program, the instructional staff changed. In some cases, programs also changed. No time was allowed, except in rare instances, for the teachers of the two halves to coordinate their efforts, consequently, the transition between the two periods in many instances resulted in confusion and lack of continuity in the program. This also was true to a lesser degree for the Title I summer program.

Fourth grade students also were tested during the week of January 19, 1976 to see if the September trends continued. Only students with May and September scores were included in this analysis.

An analysis of covariance was computed on the pretest and posttest scores for both groups of students (summer school and nonsummer school) for each service (reading and mathematics) for each grade level. The pretest scores served as the covariate and the posttest the criteria. In addition, the test norms were examined to determine the expected raw score growth from the end of one grade level to the beginning of another grade level along percentile scores. Fourth-grade students performing in the lower three stanines (a criteria for eligibility for Dade County

Title I students) were expected to increase in reading an average of two raw score points in order to maintain the same percentile ranking from the end of the third grade to the beginning of the fourth grade. Eighth graders were expected to achieve the same raw score in reading to maintain the same percentile rank. A growth in reading scores would be expected as students on the average are expected to read during the summer regardless of summer school, however this is not the case in mathematics because students don't ordinarily learn mathematics if they are not in school (Conklin, 1974). Consequently, the mathematics norms showed either a constant raw score or a decrease of one point depending upon the grade level and stanine group.

Results

The results of the data analysis showed the following:

1. Students attending summer school had higher pretest raw score means than students not attending summer school. See Table 2.

2. In nearly every instance, the mean raw scores of students not attending summer school either advanced more or regressed less than the mean scores of students attending summer school. See Figures 1 through 3.

3. No significant difference was ascertained from May to September for fourth-grade students attending and not attending summer school for reading ($F(1,174) = .180$, $p \leq .672$) or for mathematics ($F(1,176) = .307$, $p \leq .580$). See Table A in Appendix A.

4. No significant difference was ascertained from May to September for eighth-grade students attending and not attending summer school for reading ($F(1, 113) = 1.567$, $p \leq .213$) or for mathematics ($F(1,113) = 1.069$, $p \leq .303$). See Table A in Appendix A.

5. No significant difference was ascertained from September to January for fourth-grade students for reading ($F(1,157) = .379$, $p \leq .539$) or for mathematics ($F(1,163) = .842$, $p \leq .360$). See Table B in Appendix A.

Table 2

Raw Score Means and Grade Equivalents
N-counts and Standard Deviations

Grade Level, Time Period, Data	READING		MATHEMATICS	
	Nonsummer School	Summer School	Nonsummer School	Summer School
Fourth Grade				
May, 1975				
$\bar{X}$	21.3	22.4	13.1	14.2
s	8.5	8.6	5.1	5.7
N	87	90	74	105
G.E.	2.2	2.3	3.0	3.2
September, 1975				
$\bar{X}$	22.3	23.4	12.7	13.0
s	8.6	10.0	5.3	5.4
N	87	90	74	105
G.E.	2.3	2.4	3.0	3.0
January, 1976				
$\bar{X}$	26.0	26.3	14.8	14.3
s	11.1	10.1	7.1	5.8
N	76	84	70	92
G.E.	2.5	2.5	3.3	3.2
Eighth Grade				
May, 1975				
$\bar{X}$	19.2	20.1	13.0	14.0
s	5.3	7.7	5.6	4.3
N	53	63	47	69
G.E.	4.2	4.4	4.6	5.0
September, 1975				
$\bar{X}$	19.9	18.8	15.1	14.6
s	5.9	7.8	4.3	4.5
N	53	63	47	69
G.E.	4.4	4.2	5.2	5.2

Note. $\bar{X}$ = mean raw score; s = standard deviation; N = number, G.E. = grade equivalent. January data from Sept-Jan analysis

6. No significant difference was ascertained from May to January for fourth-grade students for reading ($F(1,157) = .118$, $p \leq .732$) or for mathematics ($F(1,159) = 3.001$, $p \leq .085$). See Table C in Appendix A.

7. In reading, students attending summer school and students not attending summer school gained an average of one raw score point from the end of third grade to the beginning of fourth grade. In mathematics, students attending summer school lost an average of more than one raw score point, whereas students not attending summer school lost an average of less than one half of a raw score point.

8. From the end of seventh grade to the beginning of eighth grade, students not attending summer school gained an average of .7 raw score points in reading and two raw score points in mathematics, while students attending summer school lost an average of one point in reading and gained an average of more than half a point in mathematics.

9. In most cases, an average gain of one month was attained in reading during the summer period. In fourth grade, the average grade equivalent remained constant or decreased in mathematics, whereas an average gain of two to six months was achieved in the eighth grade. See Table 2.

Conclusions and Implications

Summer school does not make a difference in Title I student performance according to the results of this evaluation. Generally, regardless of group or grade level in reading or mathematics, students attending summer school had higher mean scores in May than students not attending summer school. However, in most cases, the mean scores of students not attending summer school either advanced more or regressed less than the mean scores of students attending summer school. Consequently, by September and again in January, in most instances, the results showed students not attending summer school had higher mean scores than students attending summer school. This phenomenon was particularly evident in September in the eighth grade, but did not become as apparent until January in the fourth grade.

In most instances, students who did not attend summer school more closely approximated or surpassed the expected raw score changes according to the norm tables to maintain their percentile rank than did students who attended summer school. Although the summer school break might be an attributing factor to the quality of the program and although the regression effect toward the mean might account for some of the gains of the nonsummer school groups, the fact remains that summer school appeared to have little or no effect. If there was any effect, it was gone by the end of September.

Little summer loss was noted for either grade level in either group. In most instances, students gained over the summer rather than lost, and in most cases, those not attending summer school gained more or loss less than those students who did attend summer school.

Educational Implications and Recommendations

Summer school does not make a difference in Title I student performance according to the results of this study. Any differences which existed between the two groups were nonexistent in most cases by the end of the first month of school. Little summer loss was noted for either grade level in either group. In most instances, students gained over the summer rather than lost. The necessity of Title I as an academic summer program for these grade levels becomes questionable. Its elimination or de-emphasis of its academic aspects for more enrichment activities might be considered. Additional study across grade levels may provide more supportive evidence to eliminate or revise the summer compensatory program. An examination of the type of Title I students who attends summer school versus the type who does not would be an appropriate study. Also an investigation to study the regression effect and try to determine why students who are not in summer school seem to gain more than students in school could be useful. Specific program recommendations presented to the Dade County decision makers were (a) to eliminate or de-emphasize the academic aspects of Title I and (b) to restructure the summer program to provide for more effective learning and smoother transitions between program halves.

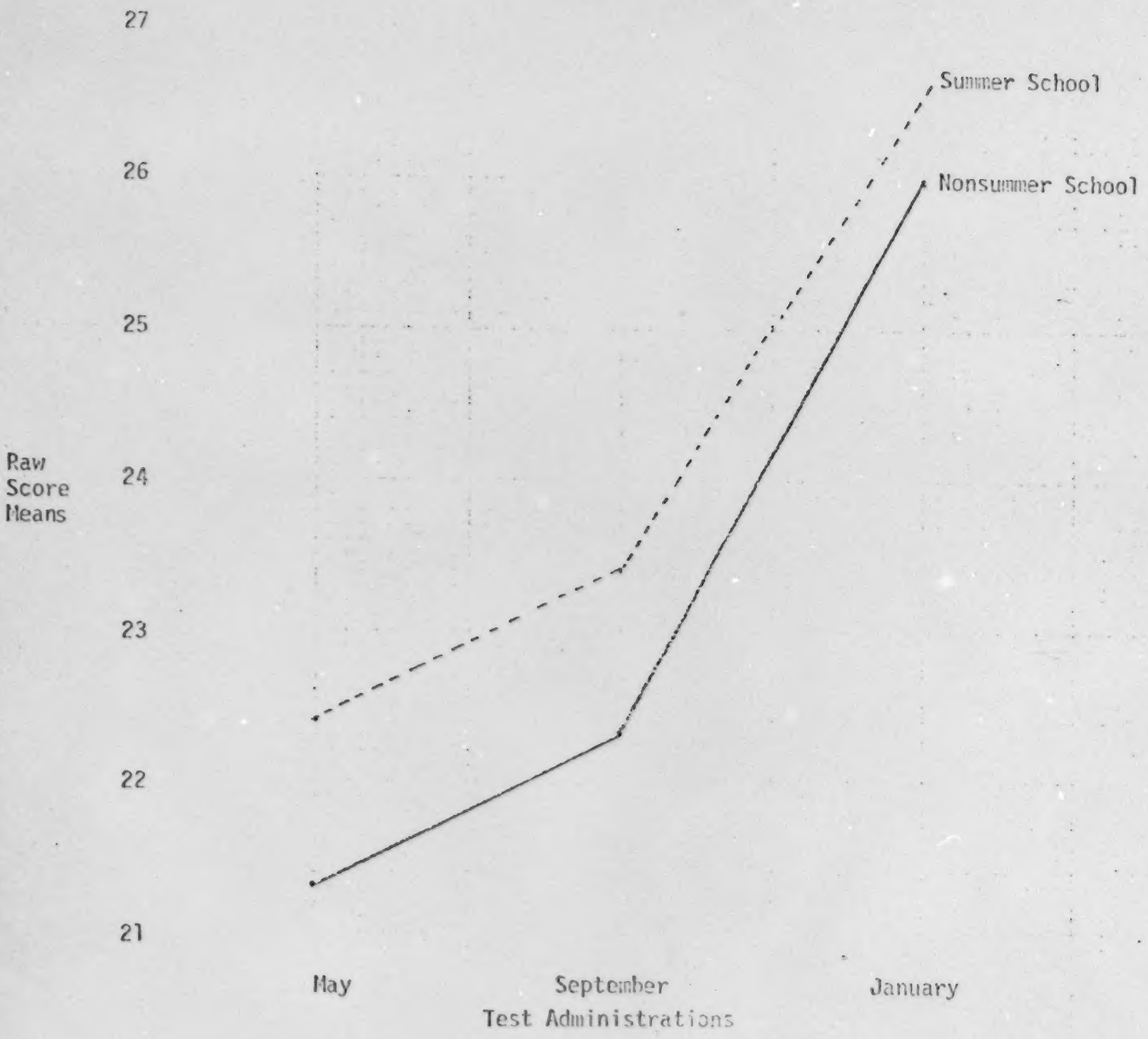

Figure 1. The change in raw score means for fourth-grade Title I students in reading.

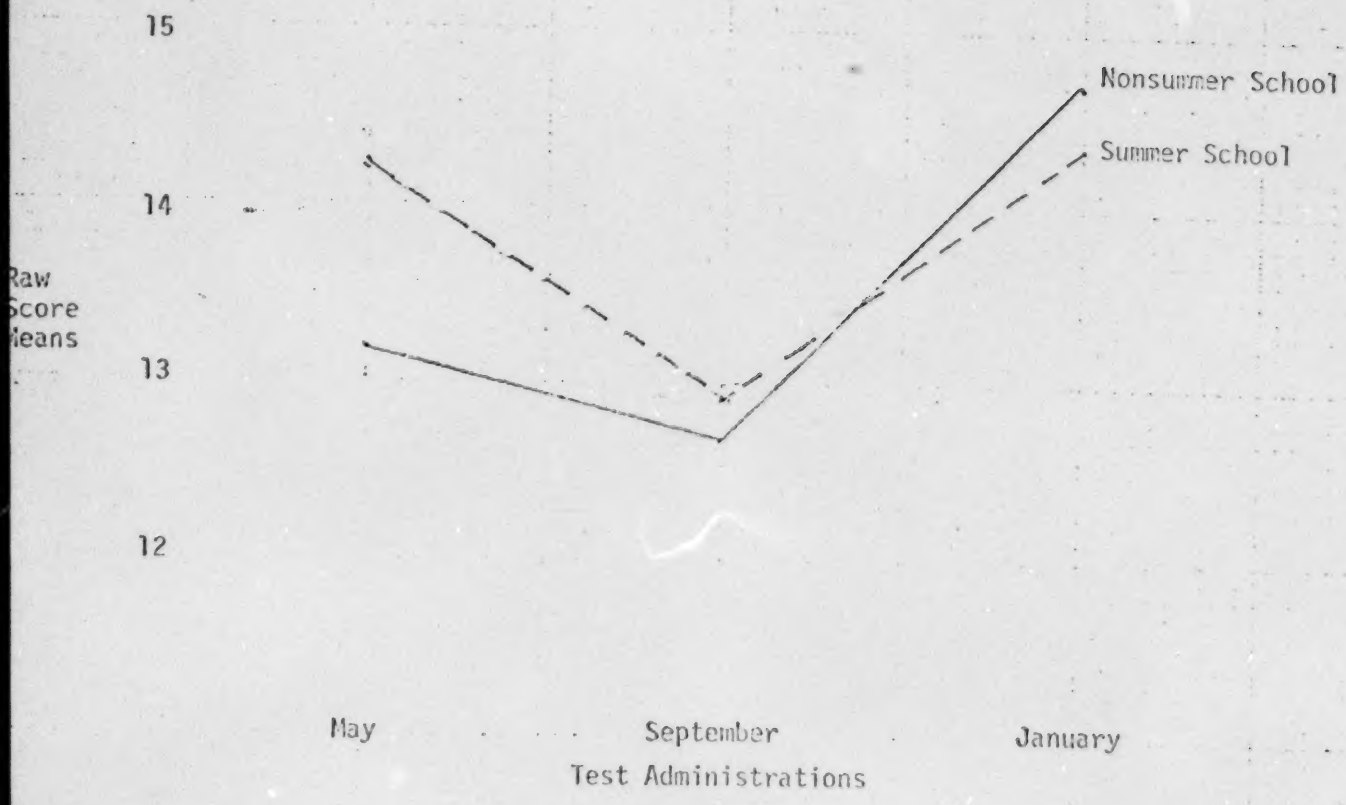

Figure 2. The change in raw score means for fourth-grade Title I students in mathematics.

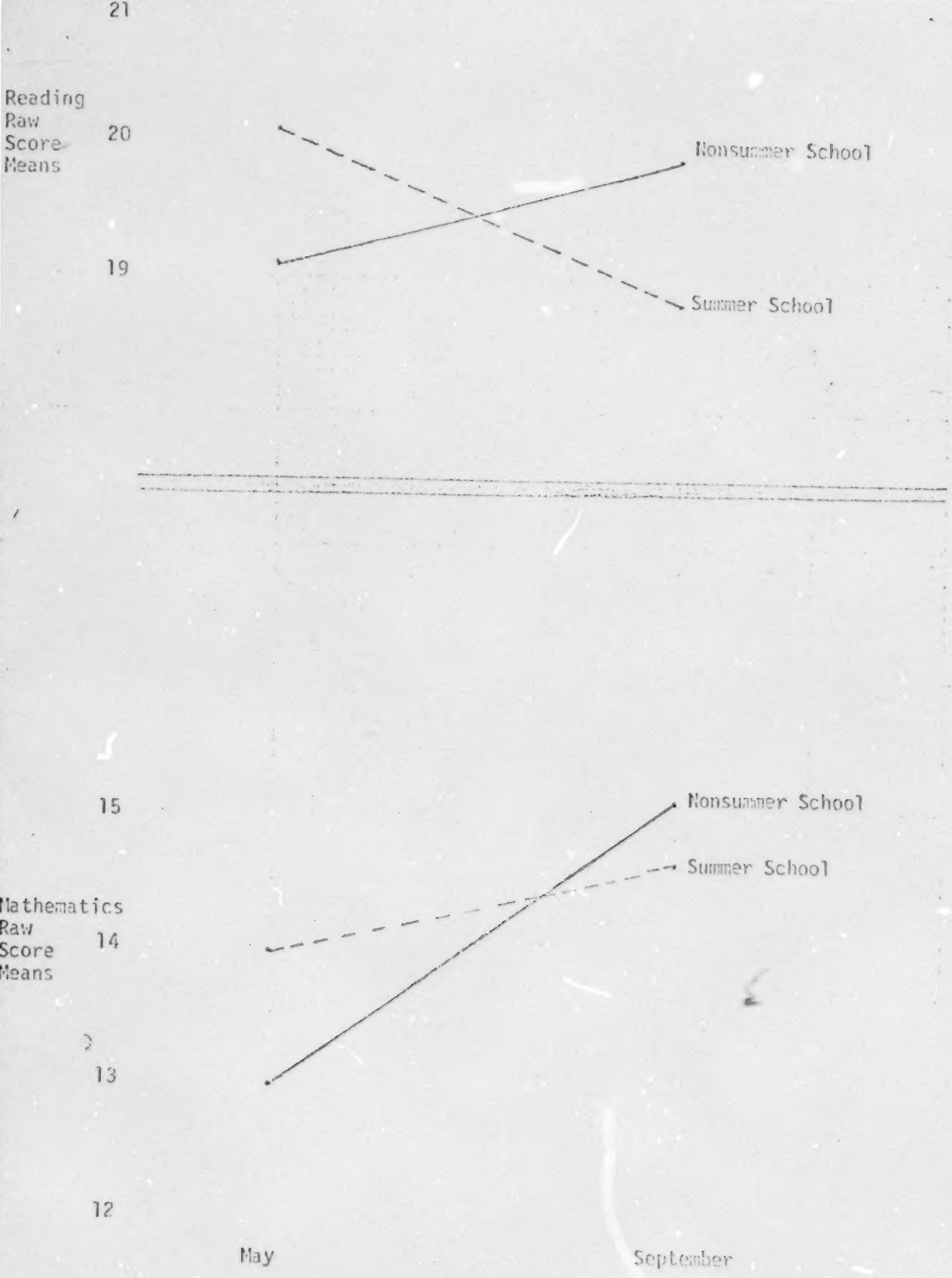

Figure 3. The change in raw score means for eighth-grade Title I students in reading and mathematics.

Appendix A

Analysis of Covariance
Tables

Table A

Results of Analysis of Covariance
May - September

Group	N	May $\bar{X}$	May S.D.	September $\bar{X}$	September S.D.	ANCOVA	Sum of Squares	Degrees of Freedom	Mean Square	F	Probability
Fourth Grade											
Reading:											
Nonsummer School	87	21.287	8.459	22.264	8.591	Within	10169.844	174	58.447		
						Regression	5047.160	1	5047.160	86.354	.001*
Summer School	90	22.367	8.588	23.433	9.983	Treatment	10.539	1	10.539	.180	.672
Mathematics:											
Nonsummer School	74	13.135	5.132	12.730	5.266	Within	3377.563	176	19.191		
						Regression	1628.847	1	1628.847	84.877	.001*
Summer School	105	14.219	5.675	12.962	5.355	Treatment	5.890	1	5.890	.307	.580
Eighth Grade											
Reading:											
Nonsummer School	53	19.188	5.274	19.887	5.886	Within	4431.660	113	39.218		
						Regression	1174.084	1	1174.084	29.937	.001*
Summer School	63	20.063	7.698	18.841	7.833	Treatment	61.465	1	61.465	1.567	.213
Mathematics:											
Nonsummer School	47	12.999	5.607	15.064	4.331	Within	1900.747	113	16.821		
						Regression	354.493	1	354.493	21.075	.001*
Summer School	69	13.971	4.322	14.609	4.525	Treatment	17.984	1	17.984	1.069	.303

*Significant at $P \leq .001$.

Table B

Results of Analysis of Covariance
September - January

Group	N	September $\bar{X}$	September S.D.	January $\bar{X}$	January S.D.	ANCOVA	Sum of Squares	Degrees of Freedom	Mean Square	F	Probability
Fourth Grade											
Reading:											
Nonsummer School	76	22.158	9.075	25.961	11.077	Within	8426.016	157	53.669		
						Regression	9165.082	1	9165.082	170.771	.001*
Summer School	84	23.429	9.896	26.262	10.053	Treatment	20.352	1	20.352	.379	.539
Mathematics:											
Nonsummer School	73	12.493	5.37	14.603	7.10	Within	4313.008	163	26.460		
						Regression	2358.416	1	2358.416	89.131	.001*
Summer School	93	13.140	5.54	14.312	5.75	Treatment	22.289	1	22.286	.842	.360

*Significant at $P \leq .001$.

Table C

Results of Analysis of Covariance
September - January

Group	N	September $\bar{X}$	September S.D.	January $\bar{X}$	January S.D.	ANCOVA	Sum of Squares	Degrees of Freedom	Mean Square	F	Probability
Fourth Grade											
Reading:											
Nonsummer School	76	21.421	8.695	25.961	11.077	Within	9168.465	157	58.398		
						Regression	8422.633	1	8422.633	144.228	.001*
Summer School	84	22.262	8.446	26.262	10.053	Treatment	6.871	1	6.871	.118	.732
Mathematics:											
Nonsummer School	70	13.171	5.247	14.843	7.136	Within	4018.776	159	25.275		
						Regression	2514.228	1	2514.228	99.474	.001*
Summer School	92	14.304	5.802	14.261	5.761	Treatment	75.839	1	75.839	3.001	.085

*Significant at $P \leq .001$.

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